Cognitive Phantoms: The Angry Kitten Pod and the Dawn of Autonomous Electronic Warfare in the 2026 Iranian Theater

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The landscape of modern aerial combat has shifted from a kinetic arms race to an invisible struggle for electromagnetic dominance. In early 2026, the arrival of F-16CJ Vipers equipped with the AN/ALQ-167 Angry Kitten pod at strategic hubs in the Middle East marked the first combat deployment of cognitive electronic warfare. This system, developed by the Georgia Tech Research Institute, represents a fundamental departure from traditional jamming. While legacy systems rely on pre-programmed threat libraries that must be updated on the ground, the Angry Kitten utilizes machine learning and Digital Radio Frequency Memory (DRFM) to sense, learn, and adapt to novel radar waveforms mid-flight. As tensions in the Iranian theater reach a critical threshold, these "smart" pods serve as the vanguard of the Wild Weasel mission set, effectively acting as an electronic shield that renders fourth-generation platforms nearly as elusive as their stealth counterparts. By digitizing and retransmitting enemy signals with deceptive timing and phase shifts, the pod creates a battlefield populated by cognitive phantoms. This paper explores the technical architecture of the system, its integration across the joint force, and the strategic implications of autonomous electronic attack in contested airspaces.

Keywords: Electronic Warfare, Cognitive Jamming, Angry Kitten, DRFM, F-16CJ, Wild Weasel, Machine Learning, Signal Intelligence, Middle East 2026, Bavar-373, Radar Spoofing, Electromagnetic Spectrum Operations.

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Art

1. The Evolution of the Electronic Battlefield

The history of electronic warfare is defined by a relentless back-and-forth between the ability to see and the ability to hide. Since the inception of radar in the early 20th century, the electromagnetic spectrum has been a contested domain, moving through distinct technological epochs that have culminated in the autonomous environments of 2026. This evolution began with the blunt instrument of noise jamming. During the Second World War and much of the Cold War, the primary method of disrupting an enemy's "eyes" was to flood their radar frequencies with high-powered radio energy. This brute-force approach, known as "barrage" or "spot" jamming, aimed to create so much static on an operator's screen that the actual target signal was buried beneath a wall of white noise. While effective against primitive sensors, noise jamming carried a fatal flaw: it acted as a massive beacon, broadcasting the jammer's presence and general direction to anyone with a receiver. It was the electronic equivalent of holding a flashlight in a dark room; you might blind the person looking at you, but you also ensure everyone knows exactly where you are standing.

As radar technology became more sophisticated, particularly with the introduction of pulse-doppler systems and frequency-agile seekers, the limitations of noise jamming necessitated a shift toward more subtle methods. This birthed the era of deceptive spoofing. Rather than simply shouting over the enemy's signal, electronic warfare systems began to "talk back" to them. Deception involves capturing an incoming radar pulse and manipulating its characteristics before sending it back. By subtly altering the timing of the returned signal, a jammer can convince an enemy radar that an aircraft is further away or closer than it actually is. By shifting the frequency, it can fake the aircraft's velocity. This period saw the rise of the first Digital Radio Frequency Memory systems, which allowed for the creation of "false targets"—electronic phantoms that appear on an enemy's scope as a swarm of ghost jets, forcing the air defense system to waste time and missiles on shadows while the real strike package slips through.

The contemporary landscape has entered a third, more dangerous phase: the shift toward cognitive electromagnetic spectrum operations. In the decade leading up to 2026, the proliferation of software-defined radars meant that an adversary could change their entire radar waveform with a simple code update, rendering traditional jammers—which relied on pre-loaded "threat libraries"—instantly obsolete. If a jammer did not recognize a specific signal, it could not counter it. Cognitive electronic warfare, exemplified by the Angry Kitten architecture, solves this by removing the human from the loop. Instead of waiting for engineers on the ground to analyze a new threat and program a response, the system uses machine learning to analyze unknown signals in real-time. It observes how the enemy radar reacts to different stimuli and autonomously develops a jamming strategy to defeat it. This transition from reactive, library-based hardware to proactive, learning-based software represents the most

significant leap in aerial survivability since the invention of stealth, turning the electromagnetic spectrum into an intelligent, adaptive shield.

2. Technical Architecture of the Angry Kitten Pod

The structural and electronic integrity of the Angry Kitten pod is centered on a move away from specialized, fixed-function hardware toward a highly flexible, software-defined framework. At its core, the system's effectiveness is derived from Digital Radio Frequency Memory (DRFM). Unlike older analog jammers that simply amplified or reflected an incoming signal with significant distortion, DRFM technology allows the pod to act as a high-fidelity digital recorder. When an enemy radar pulse hits the aircraft, the DRFM system captures the signal, converts it from an analog waveform into digital data, and stores it in high-speed memory. Once digitized, the system can manipulate the signal with surgical precision before re-transmitting it. By introducing micro-delays in the timing of the playback, the pod creates range-gate pull-off, making the jet appear miles behind its actual location. Similarly, by slightly shifting the phase or frequency, it can induce velocity-gate pull-off, tricking the radar's computer into calculating an impossible speed for the target. Because the re-transmitted signal is an exact, coherent copy of the original radar pulse, the enemy system accepts it as a legitimate "hit," making the deception nearly impossible to distinguish from a real return.

Beyond its signal manipulation capabilities, the Angry Kitten is defined by its radical hardware-software modularity. Historically, electronic warfare pods were "black box" systems; if an adversary developed a new radar frequency that the hardware wasn't wired to handle, the entire pod became a multi-million dollar weight. The Angry Kitten architecture utilizes Commercial Off-The-Shelf (COTS) components and an open-architecture design that mimics a modern computer or smartphone. The pod's "brain" is decoupled from its "ears" and "voice." The physical antennas and transmitters can be swapped out to cover different frequency bands, while the processing core remains the same. This modularity is essential for rapid iterative updates. In the high-stakes environment of 2026, where electronic threats evolve weekly, the Air Force no longer needs to send hardware back to a depot for upgrades. Instead, engineers can push "mission data files" or software patches directly to the pod on the flight line. This agility ensures that the hardware can evolve at the speed of code, allowing the F-16 to maintain its defensive edge against even the most modern, software-defined integrated air defense systems.

3. Cognitive Electronic Warfare and Machine Learning

The most transformative aspect of the Angry Kitten pod is its transition from reactive automation to genuine cognitive autonomy. For decades, electronic warfare systems operated on the principle of static threat libraries—essentially a digital "dictionary" of known enemy radar signatures. When a jet's sensors detected a signal, the system would scan its library to find a match and then execute a pre-programmed jamming response. The fatal flaw in this logic emerged with the rise of software-defined radars, which allow adversaries to change their signal characteristics—such as pulse repetition frequency or scan patterns—in the middle of an engagement. If a signal did not perfectly match an entry in the library, the legacy jammer would simply ignore it or fail to provide a coherent countermeasure. The Angry Kitten overcomes this limitation by employing machine learning algorithms that move beyond simple pattern matching toward real-time algorithm adaptation. Instead of searching for a match, the pod analyzes the underlying physics and behavior of the incoming wave. It "reasons" about the signal's intent, determining whether it originates from a search radar, a tracking system, or a missile seeker, and then generates a customized jamming solution on the fly.

This cognitive capability is particularly vital for identifying and neutralizing "pop-up" radar threats. In a contested environment like the one facing U.S. forces in 2026, air defense units often utilize "emissions control" (EMCON) strategies, keeping their radars silent until a target is within range to avoid detection. When these systems suddenly activate, they present a high-velocity problem that traditional EW suites struggle to solve. The artificial intelligence within the Angry Kitten pod functions as a digital electronic intelligence (ELINT) officer, capable of sub-millisecond processing. It can distinguish a new, unknown radar signature from background clutter or friendly signals and prioritize it based on the level of threat it poses. As the pod interacts with the enemy radar, the AI monitors the effectiveness of its own jamming. If the enemy radar successfully filters out the initial spoofing attempt, the machine learning model observes that failure and immediately adjusts its pulse width, frequency offset, or modulation to find a new vulnerability. This creates a closed-loop "learning" cycle where the jammer becomes more effective the longer it is engaged by the enemy, ensuring that the aircraft remains protected even against threats that have never been encountered before in a laboratory setting.

4. The 2026 Combat Debut: Deployment to the Middle East

In February 2026, the theoretical capabilities of cognitive electronic warfare faced their ultimate validation as 12 F-16CJ Block 52 Vipers, assigned to the South Carolina Air National Guard's 169th Fighter Wing, began a high-visibility transit toward the Middle East. This deployment,

involving the unit famously known as the "Swamp Foxes," represents the first time the Angry Kitten pod has been moved into a theater of active operations as a frontline combat asset. Observers at Lajes Field in the Azores recorded the aircraft arriving on February 17, 2026, before departing for the CENTCOM area of responsibility the following day. This movement is operationally significant because it marks the transition of the Angry Kitten from a training-focused "aggressor" tool to a primary defensive and offensive system. Unlike previous rotations where F-16s carried older ALQ-184 or ALQ-131 jammers, every aircraft in this 2026 strike package was notably equipped with the machine-learning-enabled pod on its centerline station.

The choice of the 169th Fighter Wing for this debut is a deliberate strategic signal. As a specialized Wild Weasel unit, their primary mission is the Suppression and Destruction of Enemy Air Defenses. The inclusion of the Angry Kitten pod alongside the AN/ASQ-213 HARM Targeting System (HTS) suggests a new doctrine in which electronic spoofing and kinetic strikes are more tightly integrated than ever before. Staging these assets in the Middle East provides the U.S. Air Force with a "cognitive shield" capable of addressing the unique challenges posed by the Iranian integrated air defense network. The Lajes transit serves as a logistical and symbolic checkpoint, demonstrating the rapid deployability of software-defined warfare. By moving these pods into the region, military planners are essentially establishing an adaptive electronic perimeter, ensuring that even non-stealthy fourth-generation platforms can operate in highly contested airspace with a level of electronic survivability previously reserved for fifth-generation fighters.

5. Integration with the Wild Weasel Mission Set

The "Wild Weasel" mission—traditionally defined by the dangerous task of baiting enemy surface-to-air missile (SAM) sites into activating their radars so they can be targeted—has been fundamentally altered by the introduction of cognitive electronic warfare. In the 2026 operational environment, the pairing of the Angry Kitten pod with the AGM-88 High-speed Anti-Radiation Missile (HARM) creates a synergistic "find-fix-finish" loop that is significantly more lethal than previous iterations. While the HARM missile is a kinetic tool designed to home in on the radio frequency emissions of an enemy radar, its effectiveness is traditionally limited by the "radar off" tactic. If an adversary detects an incoming missile and shuts down their transmitter, the HARM can lose its lock. The Angry Kitten pod mitigates this by using its DRFM capabilities to maintain a "phantom" presence. Even if the enemy radar is toggled on and off, the pod can mimic the aircraft's signature so convincingly that it forces the enemy operator to keep the radar active longer to distinguish the real target from the digital decoys, providing a continuous signal for the HARM to track.

This integration is critical for suppressing Advanced Integrated Air Defense Systems (IADS) like those deployed in the Iranian theater. Modern IADS are not just collections of isolated SAM batteries; they are networked organisms that share data across disparate sensors. Suppressing such a system requires more than just overwhelming force; it requires electronic finesse. The Angry Kitten acts as the "soft kill" component of the mission, using its machine learning algorithms to degrade the quality of the enemy's track data. By feeding the IADS contradictory information about the aircraft's altitude and heading, the pod forces the system's command-and-control nodes to delay engagement decisions. This electronic confusion creates a "window of vulnerability" during which the Wild Weasel pilots can launch their HARMs with high probability of success. In 2026, the goal is no longer just to dodge a missile, but to electronically paralyze the entire network, ensuring that by the time an IADS realizes it is under attack, the kinetic strike is already terminal.

6. Expanding the Pawprint: Integration with Drones and Heavy Lift

The strategic utility of the Angry Kitten architecture extends far beyond the airframes of high-performance fighter jets. In 2025 and early 2026, the U.S. Air Force successfully concluded a series of integration trials designed to bring cognitive electronic warfare to slower, more vulnerable platforms, most notably the MQ-9 Reaper and the C-130 Hercules family. The results of the MQ-9 trials were particularly significant; by equipping an unmanned platform with the Angry Kitten, the military has created a persistent, semi-expendable electronic picket. During exercises, Reapers carrying the pod were able to orbit on the edge of contested airspace for over twenty hours, autonomously identifying and suppressing "pop-up" threats without risking a human pilot. Similarly, integration with the C-130 and the A-10 Thunderbolt II has provided these "heavy lift" and "low-and-slow" assets with a sophisticated self-defense capability they previously lacked. Instead of relying solely on traditional flares and chaff, these aircraft can now use DRFM spoofing to electronically "disappear" from enemy radar screens, significantly increasing their survivability in modern high-threat environments.

Looking ahead, the success of these trials points toward a future defined by expendable autonomous jamming assets. The modularity of the Angry Kitten software is being ported into smaller, lower-cost "attritable" drones designed to be launched in swarms. These "loitering jammers" are intended to fly ahead of manned strike packages, acting as electronic scouts that map out the enemy’s integrated air defense system (IADS) in real-time. Because the system is cognitive, these drones can share data with one another, creating a distributed network of jammers that adapt to enemy countermeasures collectively. This move toward expendable hardware represents a paradigm shift in electronic warfare: rather than protecting a single multi-million dollar pod on a fighter jet, the mission becomes about saturating the

electromagnetic spectrum with dozens of smart, cheap, and autonomous "kittens." By the late 2020s, this approach will likely turn the sky into an impenetrable forest of electronic phantoms, making it impossible for an adversary to identify the real targets amidst a sea of intelligent decoys.

7. Comparative Analysis: Angry Kitten vs. Legacy Systems

The transition to the Angry Kitten architecture represents a generational leap in electronic warfare capability, particularly when benchmarked against the long-standing workhorses of the U.S. inventory, such as the AN/ALQ-131 and the AN/ALQ-184. For decades, these legacy pods provided the primary line of defense for the F-16 and A-10 fleets. The AN/ALQ-131, which first entered service in the 1970s, relied on modular hardware to cover specific frequency bands, while the AN/ALQ-184 utilized multiple mini-traveling wave tubes to provide high-power jamming against a variety of surface-to-air and air-to-air threats. However, these systems are fundamentally limited by their reliance on hardware-defined logic and pre-programmed threat libraries. In a combat scenario, if a legacy pod encounters a radar waveform that is not explicitly defined in its memory, it often fails to provide any effective countermeasure, leaving the aircraft vulnerable to modern, agile threats.

The core vulnerability of these older hardware-fixed jammers lies in their inability to adapt at the speed of software. Legacy systems operate on a "match-and-respond" cycle: they must identify a signal, find its match in a library, and then trigger a fixed jamming technique. This makes them highly susceptible to "electronic surprise" in the 2026 theater, where adversaries utilize frequency-agile radars that can shift parameters in milliseconds. In contrast, the Angry Kitten pod utilizes a software-defined radio (SDR) architecture that removes these hardware bottlenecks. While a legacy pod might require months of depot-level hardware modifications to counter a new threat, the Angry Kitten can be updated with a simple code push. Furthermore, the Angry Kitten’s ability to conduct simultaneous electronic support and electronic attack allows it to jam with higher precision and lower power consumption than the "brute force" noise-jamming techniques often employed by legacy systems, which frequently resulted in "self-jamming"—unintentionally blinding the aircraft's own sensors while attempting to disrupt the enemy.

8. Adversary Countermeasures: Seeing Through the Phantoms

While the Angry Kitten pod represents a peak in electromagnetic deception, it is not an absolute cloak of invisibility. In the contested environments of 2026, adversary defense planners have pivoted toward asymmetric sensing technologies designed specifically to bypass radio

frequency (RF) manipulation. The most significant threat to the "cognitive phantom" is the proliferation of Infrared Search and Track (IRST) systems and thermal imaging. IRST sensors are entirely passive; they do not emit radio waves and, therefore, do not provide a signal for the Angry Kitten to "catch" or spoof. These systems scan the horizon for the intense heat signatures produced by jet engines and the frictional heat on an airframe's leading edges. Because the pod's jamming is confined to the RF spectrum, a pilot may successfully deceive an enemy radar while remaining perfectly visible to a long-range thermal camera. Iranian platforms, such as the Su-35 and various ground-based electro-optical trackers, utilize these sensors to "cue" missiles, allowing them to engage targets without ever turning on the radars that the Angry Kitten is designed to defeat.

On the electromagnetic front, sophisticated defensive strategies such as multistatic radar networks and extreme frequency hopping present significant challenges to DRFM-based systems. A multistatic radar network utilizes a single transmitter but places multiple receivers in geographically dispersed locations. While a jammer like the Angry Kitten can create a convincing "ghost" target relative to one receiver, the geometry of the other receivers often reveals the deception. By cross-referencing the timing and angle of the return signals from multiple vantage points, the network can triangulate the actual physical location of the aircraft, effectively "seeing through" the electronic fog created by the pod. Furthermore, modern radars utilize Low Probability of Intercept (LPI) techniques, including non-traditional waveforms and rapid, pseudo-random frequency hopping. If a radar can change its frequency faster than the pod's machine learning algorithms can analyze and re-transmit a coherent response, the jamming signal becomes uncorrelated noise. In this high-speed game of electronic "cat and mouse," the side that can process and adapt its waveform the fastest—whether it is the jammer or the radar—will ultimately hold the tactical advantage.

9. Global Alternatives and Competitors

While the Angry Kitten pod is the current centerpiece of the U.S. Air Force's cognitive electronic warfare strategy, it exists within a competitive global ecosystem of advanced jamming systems. One of its primary domestic and international rivals is the L3Harris Viper Shield (AN/ALQ-254). Unlike the Angry Kitten, which is an external pod that occupies a weapon station, Viper Shield is an all-digital, software-defined suite integrated directly into the airframe of the newest F-16 Block 70/72 fighters. It provides a virtual "digital shield" around the aircraft, utilizing a smaller physical footprint while offering 360-degree protection. In the 2026 market, Viper Shield has become the preferred choice for U.S. allies who require built-in, low-latency electronic warfare capabilities that do not compromise the aircraft's payload or range. Its architecture is

specifically designed to be "future-proof," allowing for rapid software updates that can be synchronized across international fleets to counter emerging regional threats.

On the international stage, the Rafael Sky Shield represents a more "heavyweight" approach to electronic attack. Developed by Israel, this system is designed for the "escort jammer" role, intended to protect not just the carrying aircraft but an entire strike package. Sky Shield utilizes Active Electronically Scanned Array (AESA) technology to project high-powered, steered beams of interference against multiple enemy radars simultaneously. While the Angry Kitten focuses on surgical, cognitive deception, Sky Shield provides a more robust "area denial" capability, effectively blinding entire sectors of an enemy's integrated air defense system. This makes it a critical tool for large-scale operations where the goal is to create a safe corridor for dozens of aircraft through heavily defended territory. By 2026, the integration of AI into Israeli systems has narrowed the gap between American cognitive EW and international alternatives, creating a marketplace of highly adaptive electronic shields.

The landscape is also being transformed by the rise of expendable jammers, such as the Leonardo BriteCloud. These systems represent the "miniaturization" of the technology found in the Angry Kitten. BriteCloud is a small, battery-powered DRFM jammer designed to be launched from a standard flare dispenser. Once ejected, it creates a powerful electronic "ghost" that draws incoming radar-guided missiles away from the aircraft. This "active decoy" approach is significantly more effective than traditional chaff, which simply creates a cloud of metallic strips. Because BriteCloud can mimic the specific electronic signature of the jet that launched it, modern missile seekers are often unable to distinguish the decoy from the real target. The proliferation of these relatively low-cost, disposable jammers in 2026 has provided a critical safety net for pilots, ensuring that even if a primary pod is overwhelmed, the aircraft has a final, autonomous line of defense to break a missile's lock.

10. Strategic Implications for High-Intensity Conflicts

The introduction of cognitive electronic warfare has profoundly altered the calculus of aerial survivability, particularly for fourth-generation platforms like the F-16 and A-10. Historically, these aircraft were considered increasingly "attritable" in the face of modern double-digit surface-to-air missile systems, such as the S-400 or Bavar-373. The prevailing military doctrine suggested that only fifth-generation stealth fighters could operate within the "lethal rings" of these advanced defenses. However, the Angry Kitten pod and its cognitive peers have effectively extended the operational life of non-stealthy aircraft by replacing physical stealth with "electronic stealth." By using machine learning to create a perfect digital mask, these pods allow fourth-generation jets to navigate contested environments that were previously deemed

suicidal. This shift democratizes high-end survivability across the joint force, ensuring that the vast numbers of existing legacy aircraft remain relevant and lethal in a high-intensity conflict against a near-peer adversary.

Beyond the tactical level, there is a significant deterrence value in "software-defined" air superiority. In the 2026 geopolitical landscape, the traditional arms race—where one side builds a faster missile and the other builds a faster plane—has been superseded by a "code race." The ability to update the Angry Kitten's logic in hours rather than years creates a state of perpetual uncertainty for an adversary. Defense planners in nations like Iran or China can no longer be certain that their multi-billion dollar air defense networks will function as intended on the day of a conflict. If a jammer can learn to defeat a radar system in real-time, the strategic value of that radar system drops to near zero. This creates a powerful deterrent effect; when an adversary realizes that their defensive investments can be neutralized by a software patch, the cost-benefit analysis of initiating a conflict shifts toward restraint. Software-defined warfare ensures that the U.S. and its allies can maintain a "technological overmatch" that is invisible, portable, and constantly evolving, making the electromagnetic spectrum the ultimate high ground of modern deterrence.

11. Future Developments: Toward Angry Kitten Inc 2 and ATTACK

The success of the initial combat-capable Angry Kitten pods has accelerated the development of a second-generation system designed to address the even more complex electromagnetic threats of the late 2020s. Known formally as the Advanced Test and Training Capability (ATTACK) pod, and informally referred to by engineers at the Georgia Tech Research Institute as Angry Kitten Inc 2 Block 2, this follow-on system represents a complete technical overhaul of the original architecture. While the first-generation pod proved the viability of cognitive electronic warfare, the ATTACK pod is designed to scale those capabilities into the next decade. The primary focus of this new development is the transition from legacy analog components to fully digital receivers. In the original pod, certain stages of signal processing still relied on analog conversion, which introduced slight latencies and limited the instantaneous bandwidth the system could monitor. By moving to an all-digital "front end," the ATTACK pod gains significantly higher sensitivity, allowing it to detect even the faintest of "quiet" radar signals used by advanced stealth-detecting sensors.

This transition to a fully digital architecture enables a much wider instantaneous bandwidth, which is critical for countering the "frequency hopping" and "spread spectrum" techniques used by modern integrated air defense systems. A wider bandwidth allows the pod to "stare" at a larger portion of the electromagnetic spectrum simultaneously, ensuring that it does not miss a

rapid frequency shift from a hostile emitter. Furthermore, the simplification of internal electronics achieved through digitization has created extra physical space and reduced the power requirements within the pod's shell. This "room for growth" is being utilized to integrate more powerful processors capable of running even more complex machine learning models. These upcoming algorithms are expected to move beyond simple jamming and into the realm of "collaborative EW," where multiple ATTACK pods can communicate over high-speed datalinks to coordinate a multi-axis electronic strike. By the time this next iteration reaches the fleet, the "Angry Kitten" will have evolved from a reactive self-defense tool into a proactive, offensive weapon system capable of paralyzing entire national radar networks.

12. Conclusion: The Permanent Invisibility Cloak

The combat deployment of the Angry Kitten pod in 2026 marks a definitive turning point in the history of aerial warfare. By successfully transitioning cognitive electronic warfare from a laboratory concept to a frontline reality, the U.S. Air Force has effectively challenged the traditional dominance of integrated air defense systems. The impact on the 2026 geopolitical landscape is profound: it has re-established the viability of fourth-generation combat aircraft in highly contested airspaces and provided a flexible, software-driven answer to the proliferation of advanced sensors. In the Iranian theater and beyond, the Angry Kitten serves as a "permanent invisibility cloak" that adapts as fast as the enemy can recalibrate, ensuring that the electromagnetic spectrum remains a domain of U.S. and allied advantage. This shift from static hardware to learning software has not only preserved the lethality of existing fleets but has also altered the nature of strategic deterrence, making the "code race" just as vital as the nuclear or kinetic one.

However, the rise of autonomous electronic warfare systems also brings forward complex ethical and oversight challenges. As machine learning algorithms are granted more autonomy to identify and suppress threats without human intervention, the risk of "unintended interference"—jamming friendly signals or civilian communications—increases. The speed at which these "cognitive phantoms" operate often exceeds the human capacity for real-time monitoring, raising questions about accountability and the potential for rapid, automated escalation in crisis zones. As we move further into an era where software-defined machines make critical battlefield decisions, it becomes imperative for military leaders and international bodies to establish robust frameworks for the oversight of autonomous electromagnetic systems. The goal for the future must be to balance the undeniable tactical advantages of cognitive EW with a commitment to human control and the prevention of unintended consequences in the increasingly crowded invisible landscape of modern war.

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